UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

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SIEMENS MEDICAL SOLUTIONS USA, INC.,

Civil Action No. 07-190 (SLR)

Plaintiff,

v.

SAINT-GOBAIN CERAMICS & PLASTICS, INC.,

REDACTED PUBLIC VERSION

Defendant.

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DECLARATION OF MICHAEL R. MAYHUGH

Michael R. Mayhugh, of full age, declares as follows:

1. I am currently employed by defendant Saint-Gobain Ceramics & Plastics, Inc. ("Saint-Gobain") as the company's Technical Director, with world-wide responsibility for scintillation products, and I make this declaration in opposition to the motion of plaintiff Siemens Medical Solutions USA, Inc. ("Siemens Medical") for a preliminary injunction. My present responsibilities include staying abreast of our research and development programs globally within Saint-Gobain's scintillation products business, and communicating to and co-coordinating these efforts with interested major customers. These responsibilities have evolved to include the doped lutetium-yttrium orthosilicate crystals that are at the heart of this patent infringement action. I am fully familiar with the facts set forth herein.

Personal Background

2. I have been employed by Saint-Gobain or its predecessor scintillation companies in roles focused on the detection of ionizing radiation since late 1974, except for a period from 1980 to

early 1987 when I was employed by the General Electric Company ("GE") in their lighting business. During this period, I have held positions as a scientist and as a manager in both technical and operational roles always focused on the detection of ionizing radiation by means of scintillation and semi-conductor based materials. This work has generally included significant customer interaction on a technical level including close relationships with researchers developing Positron Emission Tomography ("PET") imaging systems as early as the mid-1970s.

3. My areas of technical expertise include the physical mechanisms by which solids can be used as detectors of ionizing radiation, test systems for characterizing and applying those detectors, and the application of such detectors in a variety of end uses including nuclear medicine, oil well exploration, homeland security, physics research, and so forth. In 1970, I received my Ph.D. in Solid State Physics from Dartmouth College, having previously received an A.M. degree from Dartmouth in 1968 also in Solid State Physics. My B.S. was granted by the University of California at Davis in Physics in 1965 with highest honors. My technical education was supplemented with an M.B.A. from John Carroll University in 1986. I have a number of technical publication and am co-inventor on several issued patents, including U.S. Patent No. 6,909,097 (Scintillation detector, system and method providing energy and position information), U.S. Patent No. 6,495,834 (Compact medical imager) and U.S. Patent No. 3,962,586 (Sensitized thermoluminescent phosphor and method).

Saint-Gobain

4. Defendant Saint-Gobain is a United States subsidiary of the storied French concern, Compagnie de Saint-Gobain S.A. ("Saint-Gobain (France)"), which was originally created under a different name in 1665 during the reign of King Louis XIV. One of its earliest projects was to build the Hall of Mirrors at the Château de Versailles outside Paris. During the ensuing centuries

Saint-Gobain (France) has grown both in its geographic reach and the diverse range of its business activities. Operating in over 50 countries and employing a workforce of over 200,000 people, Saint-Gobain (France) -- together with its affiliates and subsidiaries -- is today either the European or global leader in each of its major businesses, focused in five sectors: construction products, high-performance materials, packaging, flat glass and building distribution.

5. It is the high-performance materials sector of Saint-Gobain's business that is of particular relevance to this dispute. Saint-Gobain is a worldwide leader in the manufacture and development of engineered materials such as abrasives, ceramics and plastics, reinforcements and composites, textile solutions, grains and powders and crystals. Saint-Gobain expanded its capability with scintillation based radiation detectors in the 1990s through the acquisition of several businesses, including Ohio-based Bicron and Solon Technologies (the former scintillation operations of the Harshaw Chemical Company), as well as Crismatec in France. As mentioned above, one of my specific areas of responsibility is to remain current as to technical developments relevant to the Scintillation Business within the Crystals Division of Saint-Gobain, which designs and manufactures materials and assemblies used in ionizing radiation detection and measurement. The applications of the products created by the Scintillation Business include Homeland Security and Safeguards, medical imaging, oil and gas exploration, aerospace and astrophysics.

Saint-Gobain's LYSO Product and This Dispute

6. Saint-Gobain's Scintillation Business produces, processes and distributes a number of materials to its customers in the medical and healthcare industry. Of particular note here is cerium-doped lutetium yttrium orthosilicate ("LYSO"), a scintillation crystal that serves the critical radiation detection function in certain highly sophisticated positron emission tomography

scanners, including those currently manufactured by REDACTED, a major Saint-Gobain customer. These machines are used in the detection and diagnosis of cancers and other diseases and organic conditions inside the bodies of human patients in hospitals and clinics throughout the world. There are also non-human applications for this technology. Saint-Gobain manufactures the LYSO crystals it sells to under a license from the University of Central Florida, as assignee of U.S. Patent No. 6,624,420 (the "'420 patent"). Despite this, Siemens Medical has brought this lawsuit alleging that Saint-Gobain's authorized manufacture and sale of the patented LYSO crystal infringes U.S. Patent No. 4,958,080 (the "'080 patent") for certain radiation detectors based on cerium-doped lutetium orthosilicate ("LSO") scintillator crystals. For the reasons discussed more fully below and in the accompanying declaration of Kenneth J. McClellan ("McClellan Declaration") and Saint-Gobain's memorandum of law, Siemens Medical's allegations of infringement are without merit and its motion for preliminary injunction should be denied.

Saint-Gobain: a Supplier of Materials Used in PET Scanners

7. Since the mid-1970's, the Saint-Gobain Scintillation Business and its precursors, Bicron, Harshaw and Crismatec, have been involved in tailoring scintillators to produce radiation detectors suitable for use in PET scanners. PET is a highly advanced, specialized medical imaging technology that uses short-lived radioactive substances emitting positrons to produce tomographic images of the concentration of those substances within the body. These radio-tracer images give a view of the chemical functioning of the body, so called functional images, and as a result contain information not available from X-ray, MRI (magnetic resonance imaging) and most other medical imaging technologies. A critical component of a PET scanner is a "detector"

comprised of a scintillator crystal that converts ionizing radiation induced by positrons into light photons and an attached device that converts such light pulses into electrical signals.

8. The development and manufacture of technically robust and commercially viable scintillator crystals is a matter of significant skill and experience, requiring a substantial investment of capital and research expertise. For many years, PET was largely a medical research and "R&D" hospital activity, limited by perceived clinical utility and availability of the positron emitting radiotracers. As a result the market for PET detectors was also limited.

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Dual Head PET/SPECT Changes the PET Scanner Market

9. In the second half of the 1990s the market for PET scanners and the associated detector materials changed. This change came in part through the adaptation of another functional imaging modality, Single Photon Emission Computed Tomography ("SPECT"), for which Saint-Gobain had long supplied detectors, to PET for use in oncology. These dual head PET/SPECT machines used the longstanding SPECT detector crystal, Na(Tl), but in a thicker configuration than for SPECT alone. This development of dual head PET/SPECT machines was also accompanied by improved availability of a positron emitting sugar-like radiotracer called FDG which is taken up preferentially by many types of cancerous tissue. As the decade progressed, this increased interest in PET also led to an upswing in the manufacture of dedicated "full ring" PET machines -- a modality that Saint-Gobain served with thick curved NaI(Tl) plates (sold initially to

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REDACTED and with Bismuth Germanate ("BGO") scintillator sales to other customers. The dual head PET/SPECT application was further served by a variant of the thick NaI(Tl) plate, called the StarBrite® detector that preserved spatial resolution at low energy for SPECT together with greater thickness providing efficiency for the dual head PET scanner. In about the year 2000, expressed interest in obtaining from Saint-Gobain a fully-pixilated version of the curved NaI(Tl) detector for an enhanced PET full ring system. ("Pixilation" refers to mechanically dividing the scintillation crystal or optical system into an array of small optically separate parts or "pixels".)

10. During this period, Saint-Gobain devoted substantial research effort to PET based on NaI(Tl) detectors. The first main effort entailed the development of CurvePlate™ Technology, first for SPECT (where it was ultimately not adopted by the manufacturers of these machines) and later for PET. As discussed above, Saint-Gobain also developed the StarBrite® thick plate variant detector design using partially pixelated NaI(Tl) crystals. The measured light response function ("LRF") at low energy of the partially pixelated detector is narrower than that of a continuous PET detector, even though the pixelated crystal is thicker, preserving SPECT performance in a device thick enough for PET as well. Saint-Gobain's sales of StarBrite® detectors continue today -- including sales to Saint-Gobain also developed the fully pixilated stepwise curved plate for REDACTED

The Market Changes

11. With the advent of the 21st century, government decisions affecting the healthcare industry limited the use of dual head PET/SPECT and industry focus turned to dedicated PET machines, a market that has continued to grow. Saint-Gobain served this market with its NaI(Tl) curved plate product, which it sold to REDACTED Saint-Gobain

was soon also collaborating with to develop the fully-pixilated product upgrade mentioned above. In addition, Saint-Gobain was working on the development of at least two other thick-plate dedicated PET machines based on NaI(Tl) in conjunction with two other companies. During the same period, other dedicated PET machines were available based on BGO, and LSO was emerging as a high-end technology scanning material from CTI. Through late 2001, Saint-Gobain was focused on supplying NaI(Tl) for PET, a cost-effective solution in the PET market. Saint-Gobain also began development of two additional materials for next generation PET products: $LaBr_3$:Ce and lutetium pyrosilicate (LPS) (a possible competitor for LSO in the high end market). As of late 2001, Saint-Gobain was contemplating the introduction of LPS material by mid 2002; and at the same time, became aware of and considered work by scientists at the Los Alamos National Laboratory who were developing LYSO as a material that might offer another path to a high-Z product. ("High-Z" is a reference to materials composed of atoms of high atomic number.)

12. Further government decisions and industry consolidation rapidly changed product plans and virtually eliminated NaI(Tl) as a scintillation detector material in dedicated PET technology by 2002. Notably, Marconi bought Picker and then Philips Medical Systems ("Philips") bought both ADAC and Picker/Marconi and decided both to eliminate the ADAC curved plate NaI(Tl) product and a thick NaI plate system that had been developed at Marconi. GE in turn purchased SMV and after a time decided to discontinue another dedicated PET scanner based on NaI(Tl). Since that time, the market for PET materials -- including the scintillator detector crystals that Saint-Gobain sells for PET -- has been controlled largely by three companies: Siemens Medical (via CTI), GE and Philips.

Saint-Gobain Changes Focus

13. In the period that followed, Saint-Gobain experienced limited PET crystal sales and focused on forward-looking prospects. GE was concentrating on BGO-based systems and marrying them to X-ray Computerized Tomography ("CT") scanners. Saint-Gobain became a limited BGO supplier, having elected earlier to devote most of its BGO-growth capacity to the telecommunications (rather than the medical and healthcare) market during the PET ramp-up, a decision that led GE to develop alternative low-cost off-shore suppliers of BGO. CTI offered BGO, but not crystals obtained from Saint-Gobain, and was itself changing its product and technology focus to LSO. **REDACTED**

14. In an attempt to increase its participation in the PET materials business, Saint-Gobain continued to pursue the development under license of cerium-doped lanthanum bromide ("$LaBr_3$:Ce") and cerium-doped lutetium pyrosilicate (Ce: LPS). As it turned out, Saint-Gobain's high-Z program focused on LPS did not generate much interest among the manufacturers of PET scanners. Lanthanum bromide on the other hand was of considerable interest to those at , who had experience with pixilated NaI(Tl) during their association with **REDACTED** Given that interest and associated system models $LaBr_3$:Ce seemed, initially, to offer considerably greater promise.

Time-of-Flight

15. A major reason for interest in $LaBr_3$:Ce was their stated belief that the next major advance in PET scanners would be the time-of-flight ("TOF") feature. (TOF is an advanced method expected to improve PET image quality or shorten scanning times based on very rapid recognition of the scintillation signal). In various interactions with Saint-Gobain,

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personnel had proposed development of a next-generation (TOF) PET based on a lanthanum bromide ("La-Bromide") detector. This interest and the growth potential in PET caused Saint-Gobain to invest heavily in La-Bromide, driven by the prospect of supplying materials to for their incipient (TOF) PET scanners. La-Bromide is highly hygroscopic, has a difficult non-water based synthesis and purification chemistry and has a hexagonal crystal structure with non-isotropic thermal characteristics that complicates crystal growth, all of which meant that its development represented a substantial departure from Saint-Gobain's scintillation efforts up to that point in time. Saint-Gobain's investment in La-Bromide intensified in 2002 and thereafter even though Saint-Gobain came to recognize that there were factions within Philips considering (TOF) PET scanners using detectors incorporating higher-Z crystals instead.

An LYSO License, but for which Patent?

16. In part because GE had indicated that it was not interested in LPS, Saint-Gobain added LYSO to its high-Z program R&D even though Saint-Gobain's main effort and focus remained directed at developing $LaBr_3$:Ce scintillators. In order to use LYSO, Saint-Gobain sought to secure an LYSO license. Saint-Gobain initially obtained a license for U.S. Patent No. 6,323,489 (the "'489 patent"), for an LYSO crystal scintillator. Saint-Gobain later learned that two patents were granted on a LYSO scintillator crystal: the '489 patent and the '420 patent, the latter assigned to the University of Central Florida. When it became clear that the University of Central Florida's patents would be granted priority, Saint-Gobain began to pursue a license for LYSO from the University, and a license was secured in December 2003. Notably, the '489 LYSO patent and the '420 LYSO patent both reference -- and were patented as non-obvious over -- the Melcher '080 patent, the patent-in-suit in this action.

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La-bromide or LYSO?

17. Saint-Gobain's scintillator development efforts continued to heavily emphasize $LaBr_3$:Ce for TOF PET -- although Saint-Gobain continued to carefully track parallel interest in LYSO. By 2005, a La-Bromide based system design was developed at with Saint-Gobain's support and its delivery of two PET machines' worth of La-bromide to

18. At the same time, and initially unbeknownst to Saint-Gobain. also adopted a parallel LYSO TOF design based on their GSO scanner rather than on an analogue to the La-Bromide design. At this time, the LYSO market also looked promising because GE had shown interest in LYSO- based machines (though without TOF capabilities). Ultimately, LYSO became of most interest to and La-Bromide faded from plans; Siemens and GE weren't interested in La-Bromide near-term either. As a result of these developments in the PET scintillator market, Saint-Gobain had no choice but to defer its development of La-bromide for TOF PET, and turned its focus and R&D dollars to producing, processing and distributing superior cost-effective LYSO for the PET scanners that , was developing and was soon manufacturing.

At Philips' Request, Saint-Gobain Manufactures and Sell LYSO

19. In its preliminary injunction papers, Siemens Medical accuses Saint-Gobain of "urging at least one of Siemens Medical's medical imaging competitors to incorporate those [LYSO] crystals into infringing PET scanners." This statement is blatantly false in at least two respects. First, as established in Saint-Gobain's papers in opposition to Siemens Medical's motion for a preliminary injunction, the use of Saint-Gobain's patented LYSO crystals in PET scanners does not infringe the '080 Patent. Second, it was that expressed interest in

LYSO scintillator crystals; Saint-Gobain -- which had been heavily invested in the La-bromide alternative -- did not urge to use LYSO.

20. Having secured the rights to manufacture, market and sell the patented LYSO crystal, Saint-Gobain entered into negotiations with These negotiations yielded REDACTED between Saint-Gobain and pursuant to which Saint-Gobain has agreed to provide LYSO and other materials to

The Impact of this Lawsuit

21. In this action Siemens Medical seeks to damage its competitor, , by attacking one supplier of LYSO, Saint-Gobain. Saint-Gobain is not a competitor of Siemens Medical; is -- and there are other suppliers of scintillator crystals that could supply with LYSO if Saint-Gobain were enjoined from doing so. In addition to significant loss of sales to one of Saint-Gobain's most significant customers, one possible outcome of an injunction is the closure or retooling of a Saint-Gobain plant, located outside Grenoble in France, which grows and prepares the LYSO crystal pieces for PET. Retooling or reopening this plant after the business interruption created by an injunction would be a very difficult prospect. And, as shown in Saint-Gobain's accompanying papers, the underlying premise of this lawsuit is fatally flawed because LYSO and LSO are not substantially similar substances as a matter of fairly straightforward material science. Indeed, the unique and novel properties of LYSO were recognized by the U.S. Patent and Trademark Office, not once, but twice. Saint-Gobain neither copied the LSO crystal nor avoided obtaining a patent license under the '420 patent. For these reasons, and the reasons set forth in the McClellan Declaration and Saint-Gobain's accompanying memorandum of law, Siemens Medical's motion for a preliminary injunction should be denied in all respects.

22. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on October 17, 2007

MICHAEL R. MAYHUGH

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CERTIFICATE OF SERVICE

I hereby certify that on October 30, 2007, I electronically filed the foregoing document with the Clerk of the Court using CM/ECF which will send notification of such filing to the following and which has also been served as noted:

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I hereby certify that on October 30, 2007, the foregoing document was sent to the following non-registered participants in the manner indicted:

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